

Acuarioid Nematodes in Whimbrels (*Numenius phaeopus hudsonicus*) Transient in Late Summer in Cape Breton, Nova Scotia, Canada

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ABSTRACT: Acuarioid nematodes collected from whimbrels (*Numenius phaeopus hudsonicus*) in Cape Breton, Nova Scotia, Canada, consisted of *Skrjabinocerca bennetti* sp. n.; *Ancyracanthopsis schikhobalovi* (Guschanskaya, 1950); *Skrjabinoclava snorrasoni* Anderson and Wong, 1992; and *Sciadiocara umbellifera* (Molin, 1860), and *Streptocara* sp. *Ancyracanthopsis schikhobalovi* and *S. snorrasoni* occurred in whimbrels in Iceland which also harbored 4 species of acuarioids not found in Cape Breton. *Skrjabinocerca bennetti* sp. n. is distinguished from the other 3 species in the genus by its unusually long right spicule (345 μ m versus 160 μ m or less).

KEY WORDS: Acuarioid nematodes, *Numenius phaeopus hudsonicus*, Nova Scotia, migratory birds.

There is increasing interest in information on the parasite fauna of migratory birds, because it can provide insights into the staging and wintering areas of hosts, as well as their foraging behavior. In this paper we report 5 species of acuarioid nematodes in whimbrels (*Numenius phaeopus hudsonicus* Latham, 1790) collected in Cape Breton, Nova Scotia, Canada while migrating to wintering grounds in the Gulf of Mexico and South America. These findings are then compared with the 6 acuarioid species found by Anderson and Wong (1992) and Wong and Anderson (1993) in whimbrels (*N. phaeopus phaeopus* (Linnaeus, 1758)) collected upon arrival in Iceland after migrating from wintering and staging areas in Europe and West Africa.

Materials and Methods

Nine whimbrels (8 adults, 1 juvenile) were shot while feeding on crowberries (*Empetrum nigrum*) in upland areas at Capelin Cove (45°39'W, 60°25'N) in Cape Breton, Nova Scotia, Canada in late August 1993. Birds were placed in plastic bags and frozen prior to thawing and necropsy. The subspecies of whimbrel was identified as per Prater et al. (1977); the juvenile bird was identified by the presence of a bursa of Fabricius at necropsy. Nematodes found were fixed in hot 70% alcohol with 5% glycerine and cleared for study in pure glycerine. Measurements are presented in micrometers, unless otherwise specified. Specimens have been deposited in the U. S. National Parasite Collection in Beltsville, Maryland (Nos. 84957–84964).

Results

Acuarioids were found only in the adult whimbrels; all were infected (Table 1). The following

lists the species found and provides relevant comments on identification.

Skrjabinocerca bennetti sp. n.

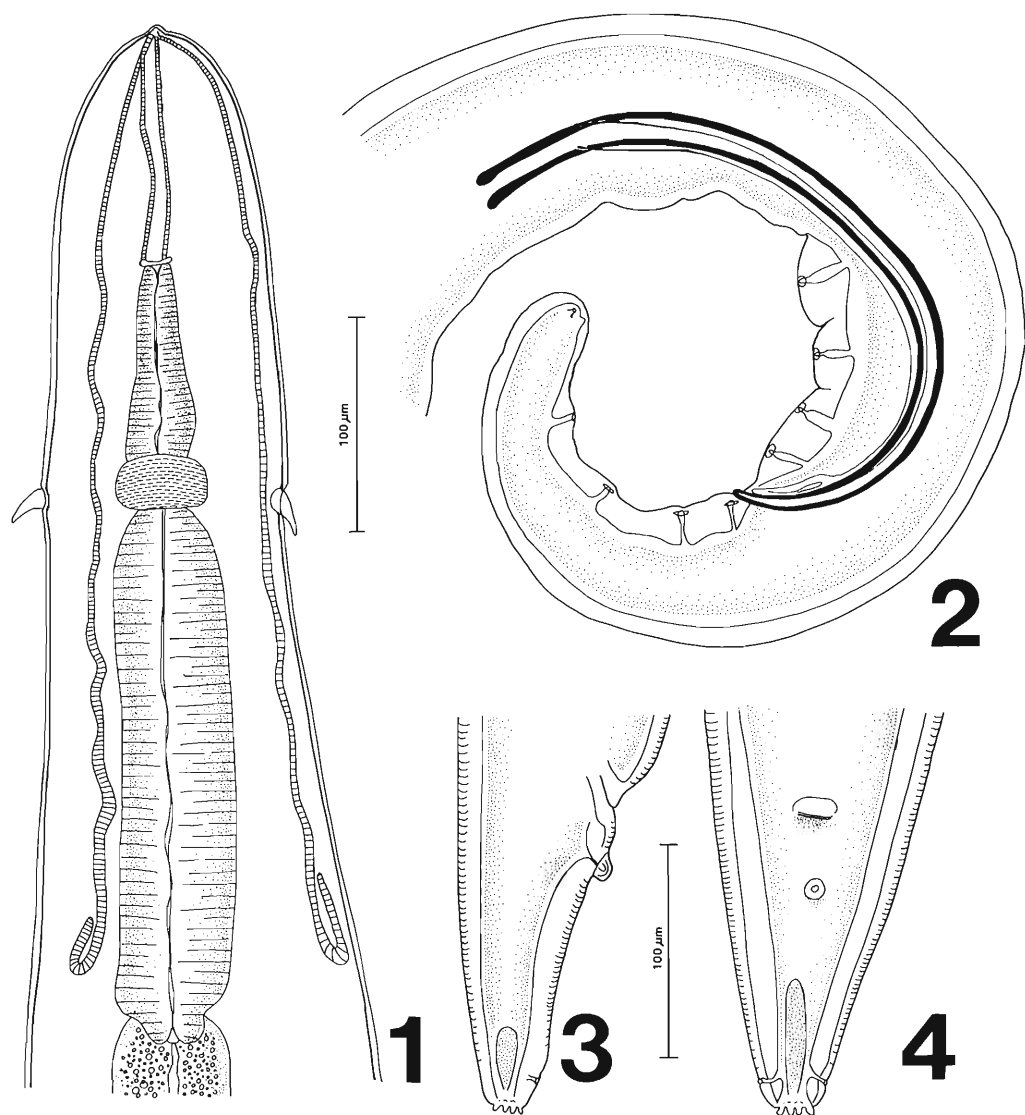
(Figs. 1–4)

GENERAL: Acuarioidea, Acuariidae, Acuariinae, *Skrjabinocerca* Schikhobalova, 1930. Small, delicate nematodes with prominent lateral alae with transverse striations. Cordons long, non-anastomosing, terminal ends often slightly recurrent. Deirids large, trifid. Muscular esophagus short; glandular esophagus long.

MALE (holotype): Length 5.1 mm. Maximum width 168. Buccal cavity 104 long. Nerve ring and deirids 230 and 233, respectively, from anterior extremity. Cordons 320 long. Muscular esophagus 458 and glandular esophagus 1.86 mm long. Spicules subequal, right 345 and left 365 long. Left spicule with tapered, blunt apex. Right spicule slightly flared at terminal end. Tail 172 long. Four pairs elongate, preanal and 5 pairs postanal papillae present.

FEMALE (first figure allotype): Length 5.3 (5.6, 5.9) mm. Maximum width 244 (220, 225). Buccal cavity 108 (100, 100) long. Deirids 290 (255, 210) from cephalic extremity. Nerve ring 225 (–, 230) from cephalic extremity. Cordons 490 (426, 420) long. Muscular esophagus 360 (440, 390) and glandular esophagus – (1.5, 2.0) mm long. Vulva 1.9 (1.3, 1.1) mm from posterior extremity. Tail 91 (150, 150) long, terminating in 6–8 blunt digitiform appendages. Eggs not larvated, 21–23 (22) \times 46–48 (46) ($N = 10$).

TYPE HOST: *Numenius phaeopus hudsonicus*, whimbrel (Scolopacidae).



Figures 1–4. *Skrjabinocerca bennetti* sp. n. 1. Anterior end female, ventral view 2. Caudal end male, lateral view showing spicules with left outlined more darkly than right 3. Caudal end female, lateral view 4. Caudal end female, ventral view.

TYPE LOCALITY: Capelin Cove, Cape Breton, Nova Scotia, Canada.

LOCATION IN HOST: Esophagus.

SPECIMENS: United States National Parasite Collection, Beltsville, Maryland, no. 84957 (holotype), no. 84958 (allotype), and no. 84959 (female paratypes).

ETYMOLOGY: The new species is named in honor of Mr. Thomas Bennett of Marion Bridge, Nova Scotia, who helped collect the whimbrels.

REMARKS: The new species is readily distinguished from the 3 other members of the genus

(*S. prima* Schikhobalova, 1930; *S. americana* Wong and Anderson, 1993; and *S. europaea* Wong and Anderson, 1993) by its subequal spicules. In other species the right spicule (120–160 μm) is much shorter than the left (285–445 μm).

Ancyracanthopsis schikhobalovi
(Guschanskaya, 1950)

Specimens were found under the koilin lining of the gizzard. Dimensions and morphologic characters agree with the redescription based on specimens from whimbrels in Iceland (Wong and

Table 1. Numbers of adult acuarioid nematodes found in adult whimbrels (*Numenius phaeopus hudsonicus*) collected in August 1992, in Cape Breton, Nova Scotia, Canada.

Bird no.	<i>Ancyracanthopsis schikhobalovi</i>		<i>Skrjabinoclava snorrasoni</i>		<i>Skrjabinocerca bennetti</i> sp. n.		<i>Sciadiocara umbellifera</i>		<i>Streptocara</i> sp.	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
500	4	3	—	2						
502	—	2								
509							6	7		
510									—	1
511	5	8			1	3				
512			1	1						
513			2	3						
526	1	2	1	—						

Anderson, 1993). *Ancyracanthopsis schikhobalovi* is 1 of 3 species in the genus in which ptilina are divided into sharply pointed posterior extensions (rather than rounded lobelike extensions). Also, this species has 4 groups of 4 extensions of the ptilinum although 1 in each group may be considerably smaller. The complex structure of the terminus of the left spicule, as well as the delicate fingerlike projection on the ventral side of the right spicule, distinguishes *A. schikhobalovi* from the 7 other members of the genus (Wong and Anderson, 1990).

***Skrjabinoclava snorrasoni*
Anderson and Wong, 1992**

Specimens were found in the proventriculus. Morphology and dimensions agree with the original description based on specimens from whimbrels in Iceland. *Skrjabinoclava snorrasoni* is distinguished from all other members of the genus by the stout right spicule (65 μ m long) with a blunt terminus and the recurved distal end of the left spicule (370–410 μ m long) which is especially obvious in the extruded spicule but can also readily be observed in the fully retracted spicule.

***Sciadiocara umbellifera* (Molin, 1860)**

Specimens were found under the koilin lining of the gizzard. Dimensions and morphology agree with the redescription based on specimens from western willets (*Catoptrophorus semipalmatus*) and gray plovers (*Pluvialis squatarola*) (see Wong and Lankester, 1985). *Sciadiocara umbellifera* is markedly different from *S. legendrei* Petter, 1966 from a whimbrel in Europe in that the spicules are much larger and morphologically different. The spicules are also much larger in *S. umbellifera* than in *S. bihamata* (Mueller, 1897), a species found in whimbrels and other shorebirds in Iceland by Wong and Anderson (1993).

***Streptocara* sp.**

A single adult female was found under the koilin.

Discussion

Five species of acuarioid nematodes were found in the Whimbrels from Cape Breton. The 2 most common, *Ancyracanthopsis schikhobalovi* and *Skrjabinoclava snorrasoni*, were also found in whimbrels in Iceland (Wong and Anderson, 1993); *A. schikhobalovi* is also known from whimbrels in the Komi Republic, formerly part of the U.S.S.R. (Wong and Anderson, 1990). These 2 acuarioid species may, therefore, be widely distributed, especially since whimbrels from Europe stray to the Canadian Maritimes, including Nova Scotia (Tufts, 1986). The only other species of the genus *Skrjabinoclava* known to infect both New and Old World waders is *S. aculeata* (Creplin, 1825) of Dunlins (*Calidris alpina*) which, like whimbrels, have a number of distinct populations with specific migration routes (Anderson et al., 1994).

Sciadiocara umbellifera has previously been reported in whimbrels, specifically in Florida (Wong and Anderson, 1991), but not in Iceland. It also occurs in various other shorebirds in the New World, and early reports from the Old World may be in error (Wong and Anderson, 1991). Based on Wong and Anderson (1993), species of *Streptocara* appear to be sporadic parasites of waders; they are common in ducks, however. The single female found herein was not identifiable to species.

Skrjabinocerca was considered monotypic until Wong and Anderson (1993) recognized 2 new species. *Skrjabinocerca bennetti* sp. n. is distinctive because of its subequal spicules; it and *S. europaea* Wong and Anderson, 1993 both occur

in whimbrels, the latter species in Iceland. *Skrjabinocerca prima* Schikhobalova, 1930 and *Skrjabinocerca americana* Wong and Anderson, 1993 use amphipods as intermediate hosts and the latter is transmitted in freshwater habitats through *Hyalella azteca* (see Tsimbaliuk and Kulikov, 1966; Bartlett et al., 1989).

Four species found in Iceland were not found in Cape Breton, namely, *Voguracuaria lankesteri* Wong and Anderson, 1993; *Schistorophus coronatus* Sobolev, 1943; *S. cirripedesmi* Rhizhkov and Hhokhlova, 1964; and *Sciadiocara bihamata* (Mueller, 1897). These could be parasites confined to Old World waders since they have not been reported in the New World (Wong and Anderson, 1991).

Acknowledgments

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